



US006197428B1

#3

(12) **United States Patent**
Rogers

(10) **Patent No.:** **US 6,197,428 B1**
(45) **Date of Patent:** **Mar. 6, 2001**

(54) **GEMSTONES AND DECORATIVE OBJECTS
COMPRISING A SUBSTRATE AND AN
OPTICAL INTERFERENCE FILM**

346666 7/1960 (CH) .
410498 10/1966 (CH) .
24 44 705 A1 4/1976 (DE) .
37 08 171 A1 9/1988 (DE) .

(75) **Inventor:** **Donald Z. Rogers, Santa Rosa, CA
(US)**

(73) **Assignee:** **Deposition Sciences, Inc., Santa Rosa,
CA (US)**

(*) **Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **08/296,779**

(22) **Filed:** **Aug. 26, 1994**

(51) **Int. Cl.⁷** **B32B 9/04**

(52) **U.S. Cl.** **428/446; 63/32; 428/542.2;
428/688; 428/689**

(58) **Field of Search** **501/86; 63/32;
428/688, 689, 542.2, 411.1, 446**

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,539,379 * 11/1970 Mayer 117/69
4,599,251 7/1986 Feller 428/156
4,793,864 12/1988 Neumiller et al. 134/1
5,054,902 * 10/1991 King 351/44

FOREIGN PATENT DOCUMENTS

265718 10/1968 (AT) .

OTHER PUBLICATIONS

Optics, pp. 376-377 © 1987 Addison-Wesley.*

* cited by examiner

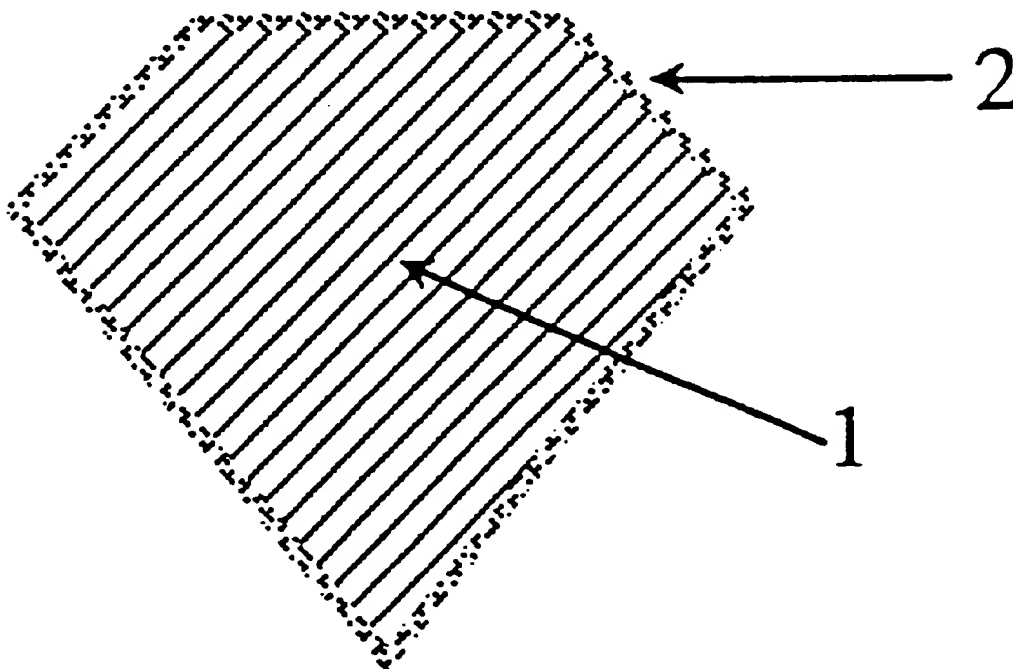
Primary Examiner—D. S. Nakanani

(74) *Attorney, Agent, or Firm*—Carter, Ledyard & Milburn

(57) **ABSTRACT**

An article useful as a gemstone or decorative object. A formed substrate is used as a base for an optical interference coating applied on the exterior of the substrate. The optical interference coating is made of alternating layers of materials with relatively high refractive indices and relatively low refractive indices, the refractive indices and thicknesses of the alternating layers being chosen so that at least part of the light of wavelengths between 400 nanometers and 700 nanometers incident on the article is reflected. The optical coating creates an interference filter formed of alternating layers of a material with a low refractive index and a material with a high refractive index. The article provides a visual appearance that is novel and different from other gemstones or decorative objects, either man-made or natural.

12 Claims, 4 Drawing Sheets



05901671-074104

BEST AVAILABLE COPY